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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/091,279	03/06/2002	Arnaud Gueguen	220260US2	5585

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EXAMINER	
TORRES, JOSEPH D	

ART UNIT	PAPER NUMBER
2133	

DATE MAILED: 08/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/091,279	GUEGUEN, ARNAUD	
	Examiner	Art Unit	
	Joseph D. Torres	2133	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 July 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 December 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The Abstract was received on 05/17/2005. The Abstract is accepted.

Claim Objections

2. Claim 11 is objected to because of the following informalities: it is not clear whether the Applicant intends for claim 11 to be an independent claim with all of the limitations of claim 10 or whether the Applicant intends for claim 11 to be dependant on claim 10. The Examiner suggests either writing claim 11 as an independent claim with all of the limitations in claim 10 inserted into claim 11 or properly writing claim 11 as an independent claim with the dependency recited in the preamble.

Appropriate correction is required.

Double Patenting

3. The Examiner withdraws all Double Patenting rejections 0f the previous Offcie Action.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 10-13 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. Claims 10, 12 and 13 recite a device in the preamble. The omitted elements are as follows: there is no connection in the body of claims 10, 12 and 13 to hardware of any device nor is their any indication that any of the elements in the body of claims 10, 12 and 13 require any hardware.

Claim 1 recites, "determining a maximum number of iterations among a plurality of integers corresponding to a maximum number of iterations to be applied by the iterative decoding process on a coded data block, **based on** the maximum error rate" [Emphasis Added]. Missing is the relationship between "determining a maximum number of iterations" and "the maximum error rate" and, in particular, the basis or the role maximum error rate plays in determining a maximum number of iterations.

Claims 1-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 recites, "determining a maximum number of iterations among a plurality of integers corresponding to a maximum number of iterations to be applied by the iterative decoding process on a coded data block, **based on** the maximum error rate" [Emphasis Added]. The term "based on" is indefinite since it does not set forth the basis or the role maximum error rate plays in determining a maximum number of iterations.

Claim 10 recites, "determining a maximum number of iterations among a plurality of integers corresponding to a maximum number of iterations to be applied by the iterative decoding process on a coded data block, **based on** the maximum error rate" [Emphasis Added]. The term "based on" is indefinite since it does not set forth the basis or the role maximum error rate plays in determining a maximum number of iterations.

Claim 12 recites, "determining a maximum number of iterations among a plurality of integers corresponding to a maximum number of iterations to be applied by the iterative decoding process on a coded data block, **based on** the maximum error rate" [Emphasis Added]. The term "based on" is indefinite since it does not set forth the basis or the role maximum error rate plays in determining a maximum number of iterations.

Claim 13 recites, "determining a maximum number of iterations among a plurality of integers corresponding to a maximum number of iterations to be applied by the iterative decoding process on a coded data block, **based on** the maximum error rate" [Emphasis Added]. The term "based on" is indefinite since it does not set forth the basis or the role maximum error rate plays in determining a maximum number of iterations.

Claim 11 recites, "an iterative decoding device **according to** Claim 10" [Emphasis Added]. The term "according to" is indefinite since it does not set forth the basis or the role Claim 10 plays in an iterative decoding device.

In addition, claim 11 is indefinite since it is not clear whether the Applicant intends for claim 11 to be an independent claim with all of the limitations of claim 10 or whether the Applicant intends for claim 11 to be dependant on claim 10. The Examiner suggests either writing claim 11 as an independent claim with all of the limitations in claim 10

inserted into claim 11 or properly writing claim 11 as an independent claim with the dependency recited in the preamble.

Claims 11-13 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. Claims 10, 02 and 13 recite, "determining a maximum number of iterations among a plurality of integers corresponding to a maximum number of iterations to be applied by the iterative decoding process on a coded data block, **based on** the maximum error rate" [Emphasis Added]. The omitted structural cooperative relationships are: the relationship between "determining a maximum number of iterations" and "the maximum error rate" and, in particular, the basis or the role maximum error rate plays in determining a maximum number of iterations.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 1-13 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 1-13 recites steps for an abstract algorithm that can be carried out by hand or in a computer program. Abstract algorithms are non-statutory. Computer programs are non-statutory.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1-9, 10, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang; Vicki Ping et al. (US 6233709 B1, hereafter referred to as Zhang) in view of Stephen; Karen J. et al. (US 6484283 B2, hereafter referred to as Stephen).

35 U.S.C. 103(a) rejection of claims 1, 6, 8 and 9.

Zhang teaches determining a maximum number of iterations among a plurality of integers corresponding to a maximum number of iterations to be applied by the iterative decoding process on a coded data block, based on the maximum error rate (col. 3, lines 30-40 in Zhang), and such that a mean number of iterations that will be applied by the iterative decoding process on the submultiple sized block size is minimized (Step 208 in

Figure 2 allows for the iterative decoding process to be aborted before the maximum number of iterations N_{max} whenever it is determined that a frame is correct thereby reducing the mean number of iterations that will be applied by the iterative decoding process on the submultiple sized block size so that the mean number of iterations is minimized).

However Zhang does not explicitly teach the specific use of determining submultiple block size among a plurality of integer block sizes N/k, which are submultiples of integer block size N by an integer factor k greater than or equal to 1, wherein k is a factor of N. Stephen, in an analogous art, use of determining the block length N/k (col. 6, lines 20-27 in Stephen teach determining submultiple block size among a plurality of integer block sizes Nbl = N/k, which are submultiples of integer block size N by an integer factor k greater than or equal to 1, wherein k is a factor of N, Note: that is what it means for N to be an integer multiple of Nbl).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Zhang with the teachings of Stephen by including use of determining submultiple block size among a plurality of integer block sizes N/k, which are submultiples of integer block size N by an integer factor k greater than or equal to 1, wherein k is a factor of N. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of determining submultiple block size among a plurality of integer block sizes N/k, which are submultiples of integer block size N by an integer factor k greater than or equal to 1, wherein k is a factor of N would have

provided an efficient technique to implement an encoder and decoder using the turbo code taught in the Zhang patent (col. 2, lines 6-10 in Stephen).

35 U.S.C. 103(a) rejection of claim 2.

Errors are a function of signal to noise ratio hence CRC error detection used for determining the number of iterations is a function of signal to noise ratio. Note also: CRC is a reliability crieteria.

35 U.S.C. 103(a) rejection of claims 3-5.

Col. 2, line 9-13 in Zhang teach that the determination of N_{min} and N_{max} may be made based on data tables stored in memory.

35 U.S.C. 103(a) rejection of claim 7.

Figure 2 of Zhang teaches that the number of iterations is never allowed to exceed the maximum number of iterations hence the selected frame size N/k will always be limited so that the mean number of iterations is always less than the maximum number of iterations.

35 U.S.C. 103(a) rejection of claim 10, 12 and 13.

Claims 10, 12 and 13 are substantially recite the same limitations as in claim 1.

7. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang; Vicki Ping et al. (US 6233709 B1, hereafter referred to as Zhang) and Stephen; Karen J. et al. (US 6484283 B2, hereafter referred to as Stephen) in view of Lee; Pil Joong et al. (US 6289486 B1, hereafter referred to as Lee).

35 U.S.C. 103(a) rejection of claim 11.

Zhang and Stephen substantially teaches the claimed invention described in claims 1-10 (as rejected above).

However Zhang and Stephen does not explicitly teach the specific use of modifying the size of at least one internal interleaver according to the received optimum block size.

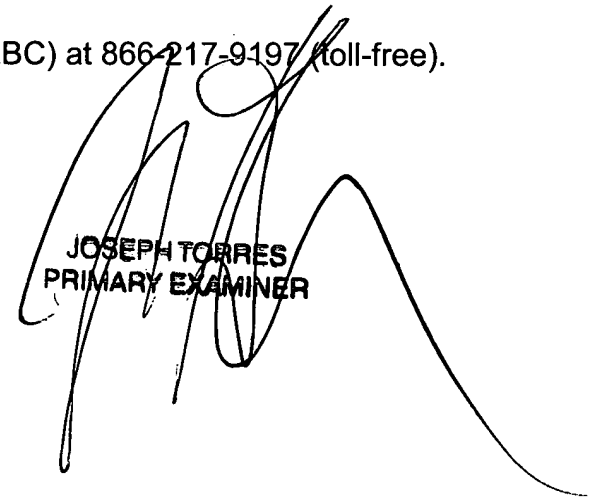
Lee, in an analogous art, teaches use of modifying the size of at least one internal interleaver according to the received optimum block size (See Frame size signal in Figure 7).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Zhang and Stephen with the teachings of Lee by including use of modifying the size of at least one internal interleaver according to the received optimum block size. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of modifying the size of at least one internal interleaver according to the received optimum block size would have provided to vary interleaving depth according to received block size.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph D. Torres whose telephone number is (571) 272-3829. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Joseph D. Torres, PhD
Primary Examiner
Art Unit 2133